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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/709,979

06/10/2004

rong huang

3978

7590

05/05/2006

RONG HUANG
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Harrisburg, NC 28075

EXAMINER

FLORES RUIZ, DELMA R

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/709,979

Applicant(s)

HUANG, RONG

Examiner

Delma R. Flores Ruiz

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1 and 4-10 is/are rejected.
- 7) ☒ Claim(s) 2,3 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/10/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 6/10/2004 have been considered by the examiner.

Drawings

The examiner has considered the drawings submitted on 06/10/2004.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1 - 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, the applicant recited: "the first linear polarizer (*if* the emission light from the gain medium is substantially polarized, this polarizer is not necessary)". This limitation is ambiguous it is not clear within the claim language if the

first linear polarizer is necessary or not necessary. ***Correction is required.***

Claims 1 - 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1 applicant recites "the etalon", this limitation is indefinite because it is not clear which etalon the applicant makes reference to, is it the retro-reflective etalon or is it the etalon filter. ***Correction is required.***

Claim 1 recites the limitation "the first linear polarizer", "the first quarter waveplate", "the etalon filter", "the second quarter waveplate", "the second linear polarizer", "the end mirror reflector" and "the etalon" in claim 1 part (a) and (d). There is insufficient antecedent basis for this limitation in the claim. ***Correction is required.***

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki (US 2003/0012250 A1) in view of Tobiasson et al. (US 2005/0150556 A1).

Regarding claim 1, Shirasaki discloses in Figure 7, an external cavity laser comprising: a gain medium (see Fig. 7, Character 506); a cavity phase adjustor (see Fig. 7, Character 510); a retro-reflective etalon comprising: (a) the first linear polarizer (if the emission light from the gain medium is substantially polarized, this polarizer is not necessary), (examiner understands that the limitation (first linear polarized) is one option therefore it does not take it in consideration), the first quarter waveplate (see Fig. 7, Character 604), the etalon filter (see Fig. 7, Character 204), the second quarter waveplate (see Fig. 7, Character 608), the second linear polarizer (see Fig. 7, Character 602), the end mirror reflector (see Fig. 7, Character 512); (b) the end reflector (see Fig. 7, Character 512) arranged in substantial or perfect parallel to the etalon filter (see Fig. 7, Character 204); (c) the optical axes of the two quarter waveplates (see Fig. 7, Characters 604 and 608) arranged in parallel or perpendicular; (d) the first quarter waveplate (see Fig. 7, Character 604) to rotate the polarization of the light reflected from the etalon (see Fig. 7, Character 204) and the first polarizer to absorb the light; (e) the second quarter waveplate (see Fig. 7, Character 608) to rotate the polarization of the light reflected from the etalon and the second polarizer (see Fig. 7, Character 602) to absorb the light; the light reflected back from the retro-reflective etalon being fed back into said gain medium (see Fig. 7, Character 506); the output light of the said laser from

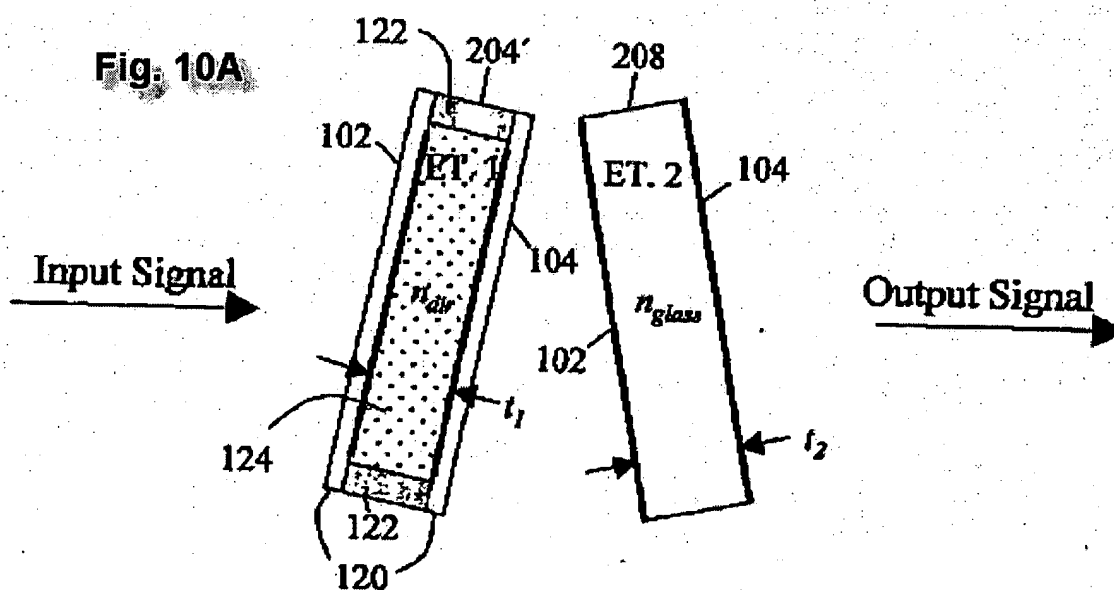
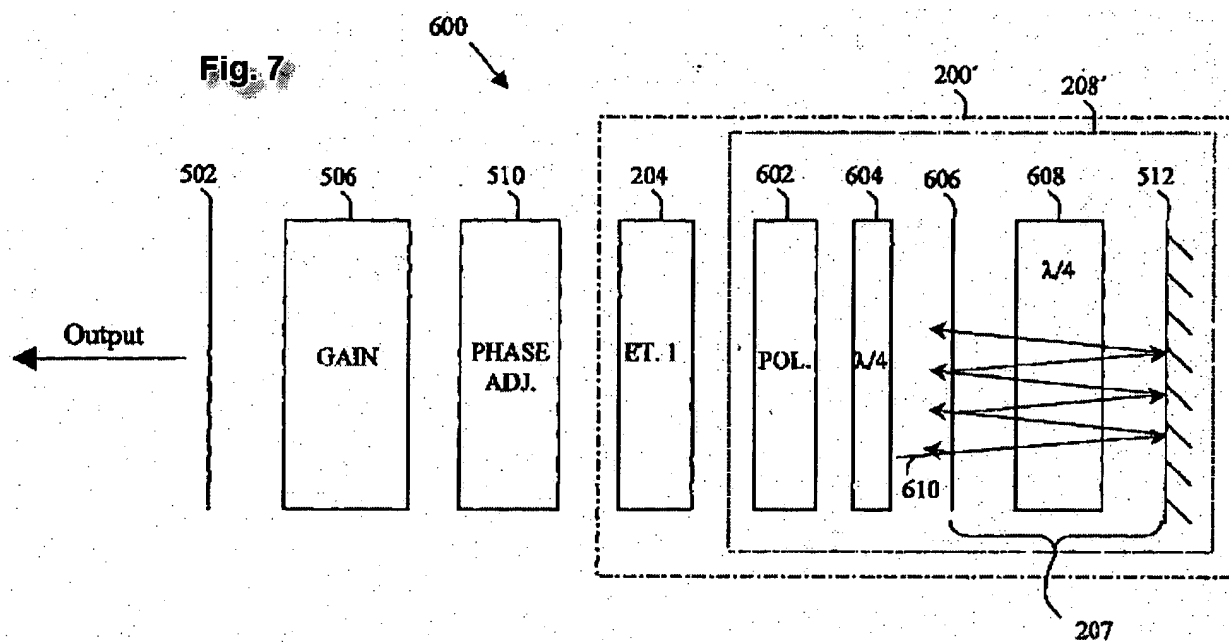
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the end reflector (see Fig. 7, Character 512) of the retro-reflective etalon and the gain medium.

Shirasaki discloses the claimed invention except for a highly reflective facet and a highly transmissive facet. However, it is well known in the art to apply the highly reflective facet and a highly transmissive facet as disclosed by Tobiason in (Paragraph [0046]). Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well known a highly reflective facet and a highly transmissive facet as suggested by Tobiason to the external cavity laser of Shirasaki, because it will be able to use a highly reflective facet and a highly transmissive facet to emitted light and The emitter facet carries a coating, which is, in various exemplary embodiments, an output coupler reflective coating, see Figure 1, characters 123 and 125 and Paragraph [0046] of Tobiason.

Regarding claim 4, Shirasaki discloses in Figure 7, the cavity phase adjustor (see Fig. 7, Character 510) is the means to adjust the cavity length to match the cavity mode(s) to the etalon peak(s) (Paragraph [0044] and abstract).

Figures 7 and 10A by Shirasaki.



Regarding claim 5, Shirasaki discloses in Figure 10A, wherein the etalon filter (see Fig. 10A Character 204') is an air-spaced etalon defined by a first partial reflector (see Fig. 10A Character 102) and a second partial reflector (see Fig. 10A Character 104), said reflectors mounted in a parallel spaced-apart (See Fig. 10A Character 124) relationship to form a gap in between.

Regarding claim 6, Shirasaki discloses in Figure 10A, wherein the etalon filter (see Fig. 10A Character 204') is defined by a first partial reflector (see Fig. 10A Character 102) and a second partial reflector (see Fig. 10A Character 104), said reflectors formed on the two parallel surfaces of a piece of transparent material. Shirasaki and Tobiason do not explicitly disclose the two parallel surfaces of a piece of *transparent material*. However, it was shown above Shirasaki and Tobiason teach a transparent material, e.g. the reflectors material is a glass. These material will inherently is transparent as claimed, and therefore limitations are taught by Shirasaki and Tobiason.

Regarding claim 7, Shirasaki discloses in Figures 9A, and 10A, wherein the optical path thickness of the transparent material (Shirasaki and Tobiason do not explicitly disclose the two parallel surfaces of a piece of *transparent material*. However, it was shown above Shirasaki and Tobiason teach a transparent material, e.g. the reflectors material is a glass. These material will inherently is transparent as claimed,

and therefore limitations are taught by Shirasaki and Tobiason.) can be changed thermally or by applying an electrical field or chosen thermally stable (Paragraphs [0049], [0051-0053]) .

Regarding claim 8, Shirasaki discloses in Figures 9A, and 10A, wherein the etalon filter is a thin film interference filter or a tapered thin film interference filter on a substrate of one transmission peak within a wavelength range defined by the requirement of single mode operation (Paragraph [0008] [0012-0013] and abstract.

Regarding claim 9, Shirasaki discloses in Figures 7, and 10A, wherein the linear polarizer only lets light with the polarization in parallel to its optical axis to pass through substantially (Paragraph [0046-0047]).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki (US 2003/0012250 A1) in view of Tobiason et al. (US 2005/0150556 A1), further in view of Bengoechea et al (US 2003/0095331 A1).

Regarding claim 10, Shirasaki in view of Tobiason discloses the claimed invention except for quarter waveplates are respectively made of a material selected from a group consisting of birefringent crystals and liquid crystals. However, it is well

know in the art to apply the quarter waveplates are respectively made of a material selected from a group consisting of birefringent crystals and liquid crystals as discloses by Bengoechea in Paragraph [0036]. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well know quarter waveplates are respectively made of a material selected from a group consisting of birefringent crystals and liquid crystals as suggested by Bengoechea to the external cavity laser of Shirasaki in view of Tobiason, because it will they are lighter, less expensive and more durable see Paragraph [0036] of Bengoechea.

Allowable Subject Matter

Claims 2, 3 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

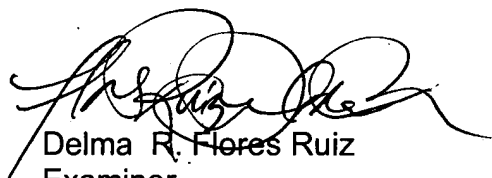
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

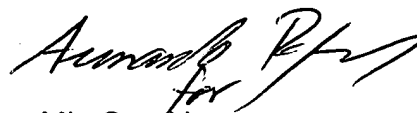
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Delma R. Flores Ruiz
Examiner
Art Unit 2828
DRFR/MH
April 27, 2006



Min Sun Harvey
Supervisor Patent Examiner
Art Unit 2828